

6L6-GC

Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

| | | |
|-------------------------------|-----------|-------|
| Voltage (AC or DC) | 6.3 ± 10% | volts |
| Current at 6.3 volts. | 0.9 | amp |

Direct Interelectrode Capacitances

(Approx.):[▲]

| | | |
|--|-----|----|
| Grid-No.1 to plate. | 0.6 | μf |
| Grid-No.1 to cathode & grid No.3, grid No.2, and heater | 10 | μf |
| Plate to cathode & grid No.3, grid No.2, and heater | 6.5 | μf |

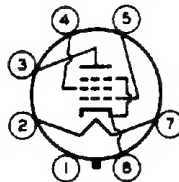
Characteristics, Class A₁ Amplifier:

| | | |
|-------------------------------------|-------|-------|
| Plate Voltage | 250 | volts |
| Grid-No.2 Voltage | 250 | volts |
| Grid-No.1 Voltage | -14 | volts |
| Plate Resistance (Approx.). | 22500 | ohms |
| Transconductance. | 6000 | μmhos |
| Plate Current | 72 | ma |
| Grid-No.2 Current | 5 | ma |

Mechanical:

| | |
|---|---|
| Operating Position. | Any |
| Maximum Overall Length. | 4-1/4" |
| Maximum Seated Length | 3-11/16" |
| Diameter. | 1.438" to 1.562" |
| Bulb. | T-12 |
| Base. | Medium-Shell Octal 7-Pin (JEDEC Group 1, No.B7-12), Short Medium-Shell Octal 7-Pin with External Barriers Style A (JEDEC Group 1, No.B7-111) or Style B (JEDEC Group 1, No.B7-119), or Short Medium-Shell Octal 6-Pin with External Barriers Style A (JEDEC Group 1, No.B6-148) or Style B (JEDEC Group 1, No.B6-122) |
| Basing Designation for BOTTOM VIEW. | 7AC |

Pin 1 • - No Connection
Pin 2 - Heater
Pin 3 - Plate
Pin 4 - Grid No.2



Pin 5 - Grid No.1
Pin 7 - Heater
Pin 8 - Cathode,
Grid No.3

AF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

| | | | |
|--|-----|------|-------|
| PLATE VOLTAGE. | 500 | max. | volts |
| GRID-No.2 (SCREEN-GRID) VOLTAGE. | 450 | max. | volts |
| GRID-No.2 INPUT. | 5 | max. | watts |
| PLATE DISSIPATION. | 30 | max. | watts |



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PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 200 max. volts
Heater positive with respect to cathode. . 200★ max. volts

Typical Operation and Characteristics:

Fixed-Bias Operation

| | | | | | |
|-------------------------------------|-------|-------|-------|-------|-------|
| Plate Voltage. | 200 | 250 | 300 | 350 | volts |
| Grid-No.2 Voltage. | 200 | 250 | 200 | 250 | volts |
| Grid-No.1 (Control-Grid) | | | | | |
| Voltage. | -11.5 | -14 | -12.5 | -18 | volts |
| Peak AF Grid-No.1 Voltage. | 11.5 | 14 | 12.5 | 18 | volts |
| Zero-Signal Plate Current. | 52 | 72 | 48 | 54 | ma |
| Max.-Signal Plate Current. | 57 | 79 | 55 | 66 | ma |
| Zero-Signal Grid-No.2 | | | | | |
| Current. | 3.5 | 5 | 2.5 | 2.5 | ma |
| Max.-Signal Grid-No.2 | | | | | |
| Current. | 5.7 | 7.3 | 4.7 | 7 | ma |
| Plate Resistance (Approx.). | 35000 | 22500 | 35000 | 33000 | ohms |
| Transconductance. | 5300 | 6000 | 5300 | 5200 | μmhos |
| Load Resistance. | 3000 | 2500 | 4500 | 4200 | ohms |
| Total Harmonic Distortion. | 9 | 10 | 11 | 15 | % |
| Max.-Signal Power Output | 4 | 6.5 | 6.5 | 10.8 | watts |

Cathode-Bias Operation

| | | | | |
|--|------|------|------|-------|
| Plate Supply Voltage | 200 | 250 | 300 | volts |
| Grid-No.2 Supply Voltage | 200 | 250 | 200 | volts |
| Cathode Resistor | 186 | 167 | 218 | ohms |
| Peak AF Grid-No.1 Voltage. | 11.5 | 14 | 12.7 | volts |
| Zero-Signal Plate Current. | 55 | 75 | 51 | ma |
| Max.-Signal Plate Current. | 56 | 78 | 54.5 | ma |
| Zero-Signal Grid-No.2 Current. | 4.2 | 5.4 | 3 | ma |
| Max.-Signal Grid-No.2 Current. | 5.6 | 7.2 | 4.6 | ma |
| Load Resistance. | 3000 | 2500 | 4500 | ohms |
| Total Harmonic Distortion. | 9 | 10 | 11 | % |
| Max.-Signal Power Output | 4 | 6.5 | 6.5 | watts |

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation 0.1 max. megohm
For cathode-bias operation 0.5 max. megohm

AF POWER AMPLIFIER — Class A₁

Triode Connection — Grid No.2 Connected to Plate

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 450 max. volts
PLATE DISSIPATION. 30 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 200 max. volts
Heater positive with respect to cathode. . 200★ max. volts



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Typical Operation and Characteristics:

| | Fixed Bias | Cathode Bias | |
|---------------------------------------|------------|--------------|------------|
| Plate Supply Voltage. | 250 | 250 | volts |
| Grid-No.1 (Control-Grid) Voltage. . . | -20 | - | volts |
| Cathode Resistor. | - | 490 | ohms |
| Peak AF Grid-No.1 Voltage | 20 | 20 | volts |
| Zero-Signal Plate Current | 40 | 40 | ma |
| Maximum-Signal Plate Current. | 44 | 42 | ma |
| Plate Resistance (Approx.). | 1700 | - | ohms |
| Amplification Factor. | 8 | - | |
| Transconductance. | 4700 | - | μ mhos |
| Load Resistance | 5000 | 6000 | ohms |
| Total Harmonic Distortion | 5 | 6 | % |
| Maximum-Signal Power Output | 1.4 | 1.3 | watts |

Maximum Circuit Values:

| | | |
|-------------------------------------|----------|--------|
| Grid-No.1-Circuit Resistance: | | |
| For fixed-bias operation. | 0.1 max. | megohm |
| For cathode-bias operation. | 0.5 max. | megohm |

PUSH-PULL AF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

| | | | |
|--|------|------|-------|
| PLATE VOLTAGE. | 500 | max. | volts |
| GRID-No.2 (SCREEN-GRID) VOLTAGE. | 450 | max. | volts |
| GRID-No.2 INPUT. | 5 | max. | watts |
| PLATE DISSIPATION. | 30 | max. | watts |
| PEAK HEATER-CATHODE VOLTAGE: | | | |
| Heater negative with respect to cathode. . | 200 | max. | volts |
| Heater positive with respect to cathode. . | 200* | max. | volts |

Typical Operation and Characteristics:

Unless otherwise specified, values are for 2 tubes

| | Fixed Bias | | Cathode Bias | | |
|--------------------------------------|------------|-------|--------------|------|------------|
| Plate Supply Voltage. | 250 | 270 | 250 | 270 | volts |
| Grid-No.2 Supply Voltage. | 250 | 270 | 250 | 270 | volts |
| Grid-No.1 Voltage | -16 | -17.5 | - | - | volts |
| Cathode Resistor. | - | - | 124 | 124 | ohms |
| Peak AF Grid-No.1-to- | | | | | |
| Grid-No.1 Voltage | 32 | 35 | 35.6 | 28.2 | volts |
| Zero-Signal Plate Current. | 120 | 134 | 120 | 134 | ma |
| Max.-Signal Plate Current | 140 | 155 | 130 | 145 | ma |
| Zero-Signal Grid-No.2 | | | | | |
| Current | 10 | 11 | 10 | 11 | ma |
| Max.-Signal Grid-No.2 | | | | | |
| Current | 16 | 17 | 15 | 17 | ma |
| Plate Resistance (Approx., | | | | | |
| per tube) | 24500 | 23500 | - | - | ohms |
| Transconductance (Per tube). | 5500 | 5700 | - | - | μ mhos |
| Effective Load Resistance | | | | | |
| (Plate to plate). | 5000 | 5000 | 5000 | 5000 | ohms |
| Total Harmonic Distortion | 2 | 2 | 2 | 2 | % |
| Max.-Signal Power Output. | 14.5 | 17.5 | 13.8 | 18.5 | watts |



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Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation. 0.1 max. megohm
For cathode-bias operation. 0.5 max. megohm

PUSH-PULL AF POWER AMPLIFIER — Class AB₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE 500 max. volts
GRID-No.2 VOLTAGE 450 max. volts
GRID-No.2 INPUT 5 max. watts
PLATE DISSIPATION 30 max. watts
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode . 200 max. volts
Heater positive with respect to cathode . 200★ max. volts

Typical Operation:

Values are for 2 tubes

| | Fixed Bias | | | Cathode Bias | |
|------------------------------|------------|------|------|--------------|-------|
| Plate Supply Voltage. . . . | 360 | 450 | 450 | 360 | volts |
| Grid-No.2 Supply Voltage. . | 270 | 350 | 400 | 270 | volts |
| Grid-No.1 (Control-Grid) | | | | | |
| Voltage↓. | -22.5 | -30 | -37 | — | volts |
| Cathode Resistor. | — | — | — | 248 | ohms |
| Peak Af Grid-No.1-to- | | | | | |
| Grid-No.1 Voltage | 45 | 60 | 70 | 40.6 | volts |
| Zero-Signal Plate Current. . | 88 | 95 | 116 | 88 | ma |
| Max.-Signal Plate Current . | 132 | 194 | 210 | 100 | ma |
| Zero-Signal Grid-No.2 | | | | | |
| Current | 5 | 3.4 | 5.6 | 5 | ma |
| Max.-Signal Grid-No.2 | | | | | |
| Current | 15 | 19.2 | 22 | 17 | ma |
| Effective Load Resistance | | | | | |
| (Plate to plate). | 6600 | 6000 | 5600 | 9000 | ohms |
| Total Harmonic Distortion . | 2 | 1.5 | 1.8 | 4 | % |
| Max.-Signal Power Output. . | 26.5 | 50 | 55 | 24.5 | watts |

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:↓

For fixed-bias operation. 0.1 max. megohm
For cathode-bias operation. 0.5 max. megohm

PUSH-PULL AF AMPLIFIER — Class AB₂

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 500 max. volts
GRID-No.2 (SCREEN-GRID) VOLTAGE. 450 max. volts
GRID-No.2 INPUT. 5 max. watts
PLATE DISSIPATION. 30 max. watts
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode. . 200 max. volts
Heater positive with respect to cathode. . 200★ max. volts

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Typical Operation:

Values are for 2 tubes

| | Fixed Bias | |
|---|------------|-------------|
| Plate Voltage. | 360 | 360 volts |
| Grid-No.2 Voltage. | 225 | 270 volts |
| Grid-No.1 (Control-Grid) Voltage [▲] | -18 | -22.5 volts |
| Peak AF Grid-No.1 to Grid-No.1 Voltage. | 52 | 72 volts |
| Zero-Signal Plate Current. | 78 | 88 ma |
| Max.-Signal Plate Current. | 142 | 205 ma |
| Zero-Signal Grid-No.2 Current. | 3.5 | 5 ma |
| Max.-Signal Grid-No.2 Current. | 11 | 16 ma |
| Effective Load Resistance (Plate to plate). | 6000 | 3800 ohms |
| Peak Grid-Input Power [◆] | 140 | 270 mw |
| Total Harmonic Distortion. | 2 | 2 % |
| Max.-Signal Power Output | 31 | 47 watts |

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:[◆]

For fixed-bias operation 0.1 max. megohm
For cathode-bias operation Not recommended

- ▲ Without external shield.
- On the 6-pin bases, pin 1 as well as pin 6 is omitted.
- ★ The dc component must not exceed 100 volts.
- ◆ In push-pull circuits where grid No.2 of each tube is connected to a tap on the plate winding of the output transformer, it is permissible for this voltage to be as high as 500 volts.
- ◆ The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.
- ◆ Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the AB₂ stage. To minimize distortion, the effective resistance per grid-No.1 circuit of the AB₂ stage should be held at a low value. For this purpose, the use of transformer coupling is recommended.

OPERATING CONSIDERATIONS

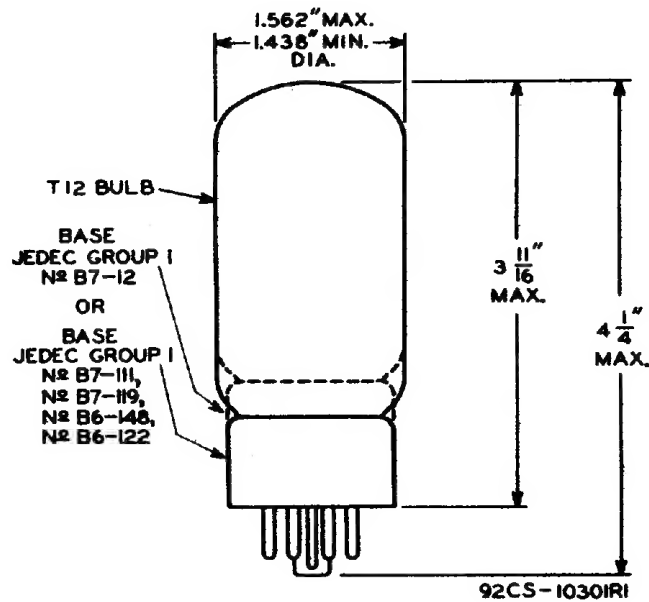
The *bulb* becomes hot during operation. To insure adequate cooling, therefore, it is essential that free circulation of air be provided.



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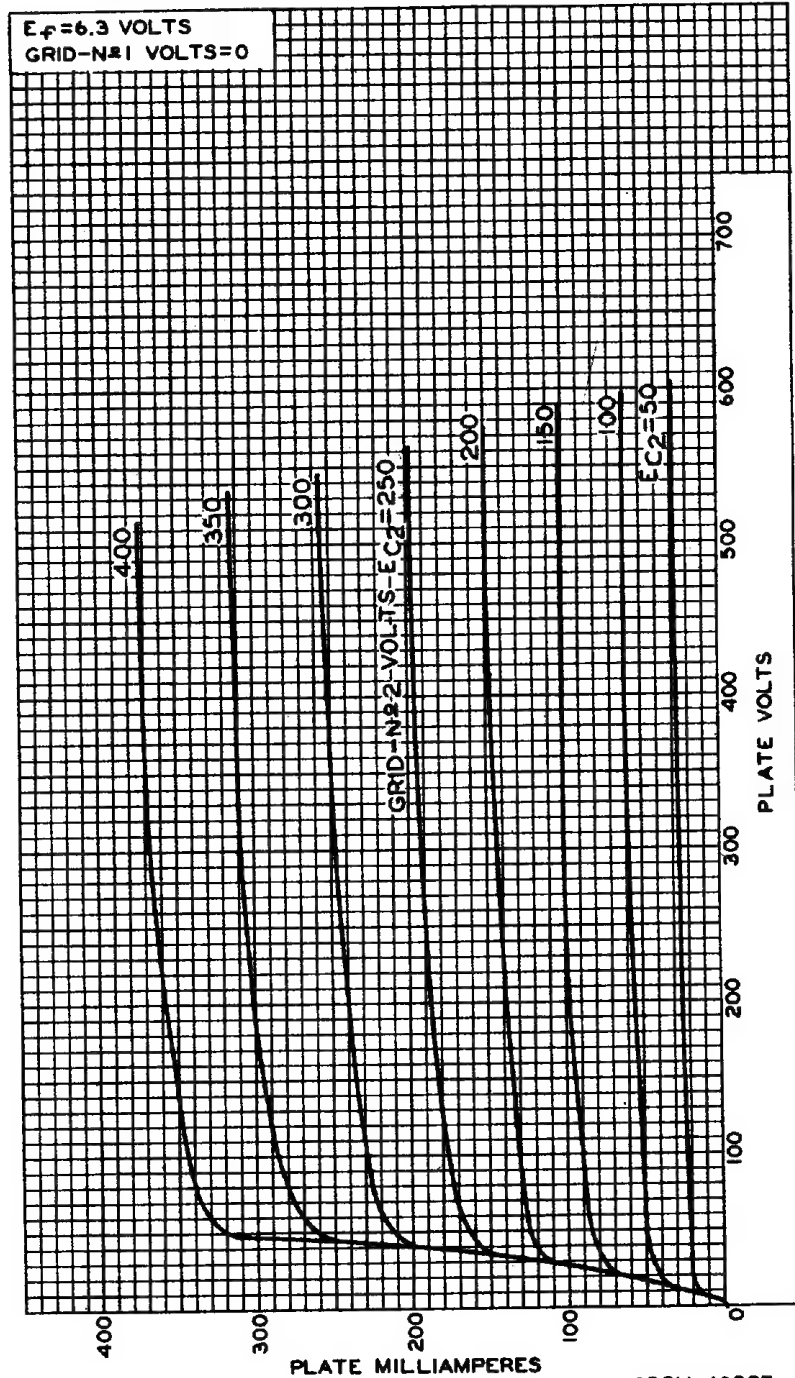
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AVERAGE PLATE CHARACTERISTICS

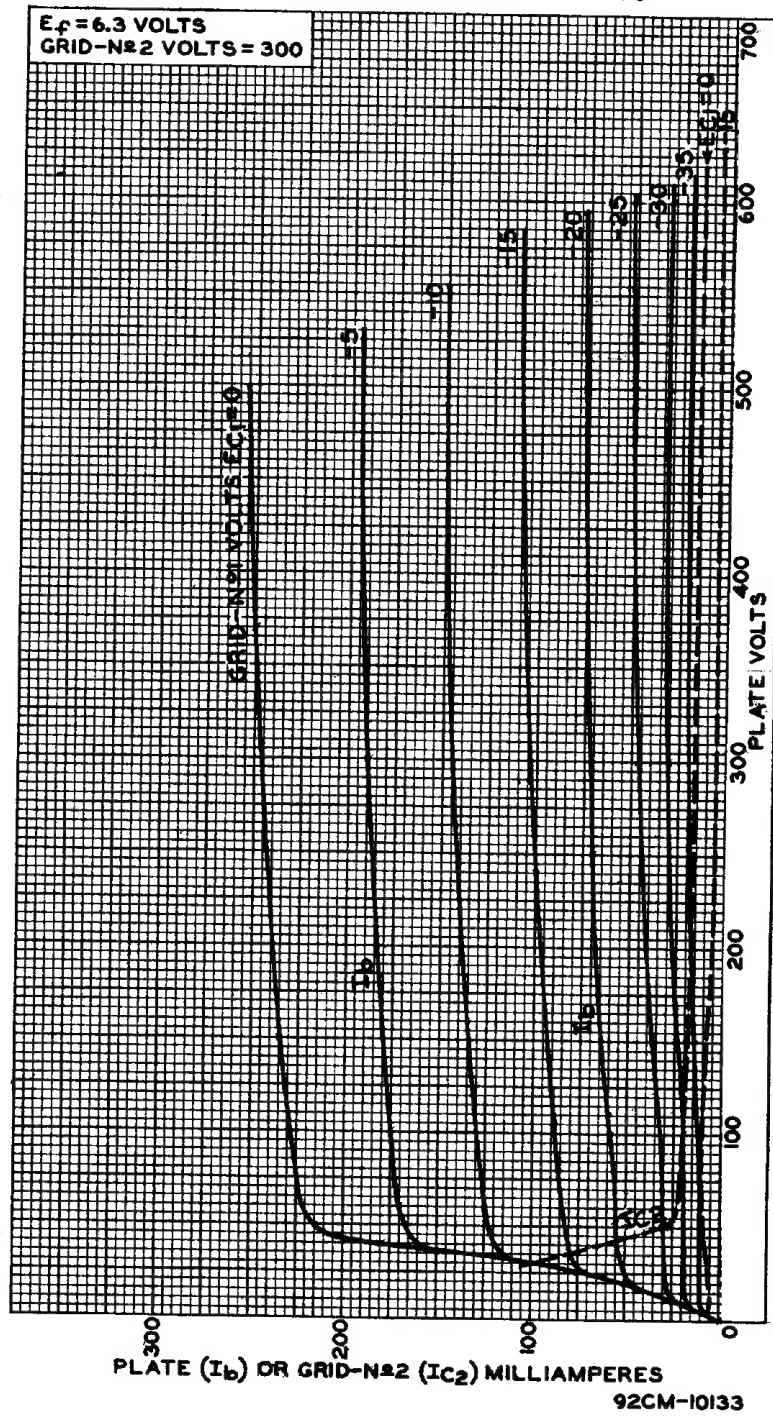


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DATA 4
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AVERAGE CHARACTERISTICS

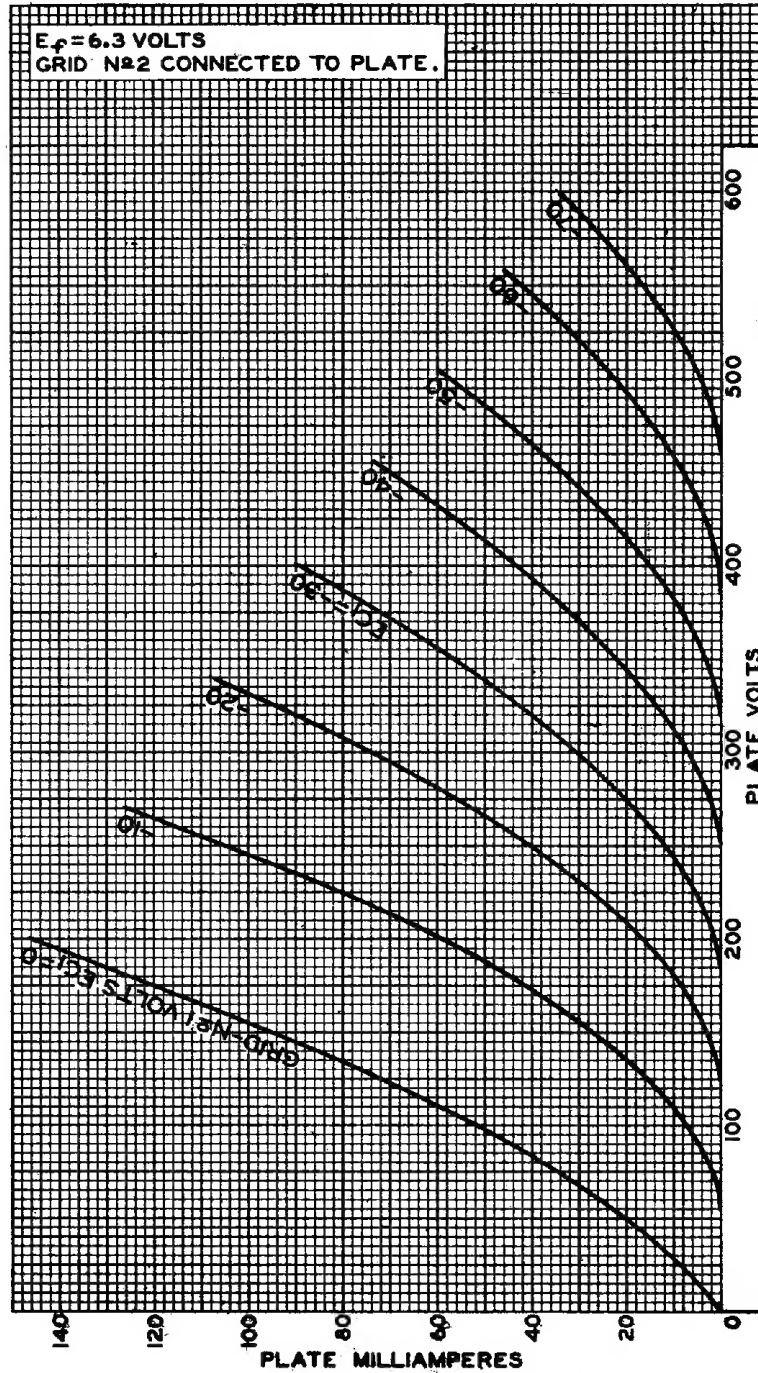


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AVERAGE PLATE CHARACTERISTICS Triode Connection



92CM-9568

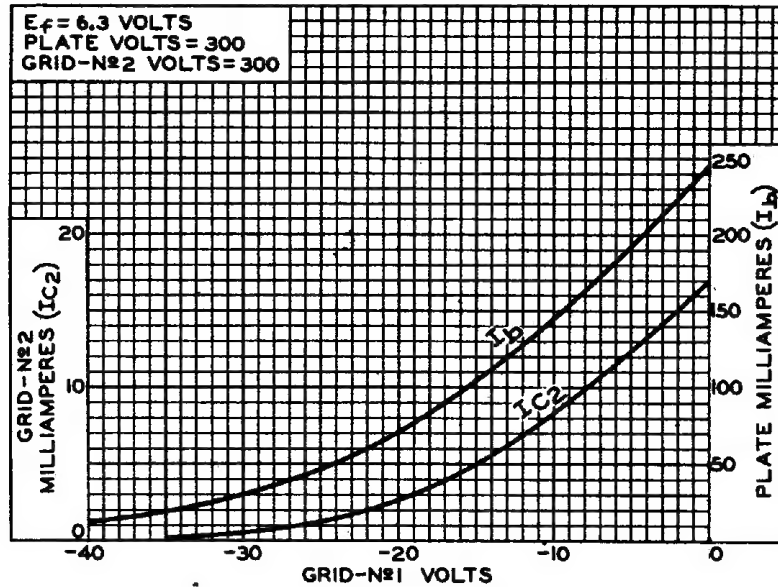


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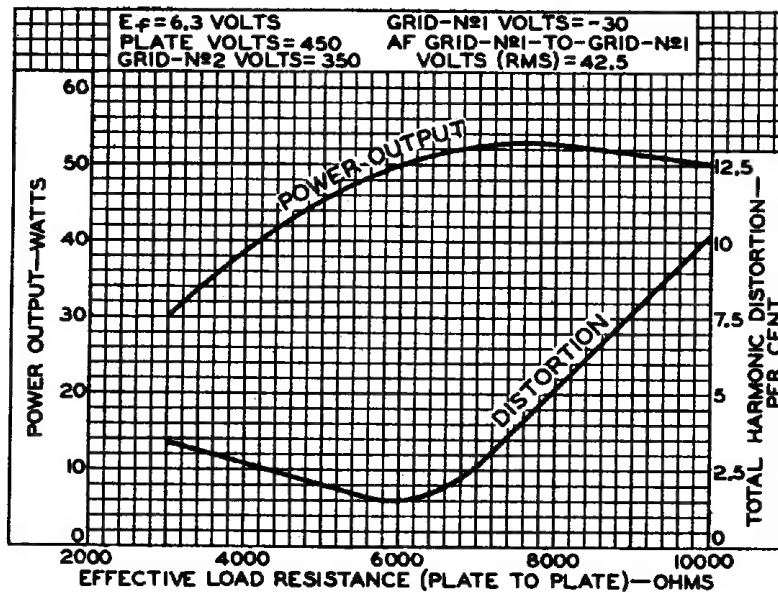
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AVERAGE CHARACTERISTICS



92CS-10126

OPERATION CHARACTERISTICS Push-Pull Class AB₁



92CS-9575

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